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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/767,604 | LIANG ET AL. | |
| | Examiner | Art Unit | |
| | Qing Chen | 2191 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *9-13 and 19-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-13 and 19-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This Office action is in response to the amendment filed on January 27, 2010.

2. **Claims 9-13 and 19-46** are pending.

3. **Claims 9-12, 19, 27, 28, 30, 32, 39, and 41** have been amended.

4. **Claims 1-8 and 14-18** have been canceled.

5. The 35 U.S.C. § 112, first paragraph, rejections of Claims 9-13 and 19-46 are withdrawn in view of Applicant's amendments to the claims.

6. The 35 U.S.C. § 112, second paragraph, rejections of Claims 9-13 and 19-46 are withdrawn in view of Applicant's amendments to the claims.

### *Response to Amendment*

### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 9-13 and 39-41** are rejected under 35 U.S.C. 102(e) as being anticipated by **US 6,823,004 (hereinafter "Abdelilah")**.

As per **Claim 9**, Abdelilah discloses:

- a first input that operates to receive information from a first device that is utilizing the modem device to communicate with a second device through a communication network *(see Column 7: 44-51, "The host system 300 is coupled to the modem 310 through a primary path 315 which supports communication services utilizing the modem 310. More particularly, communications from applications executed on the host system 300 are conveyed on the primary path 315 to the modem 310 for transmission through the port 320 which, in the illustrated embodiment, provides a connection to the Public Switched Telephone Network (PSTN).")*;

- a second input that operates to receive information from the second device through the communication network *(see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by the modem 310.")*; and

- a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis *(see Column 9: 66 and 67 to Column 10: 1-49, "... the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from the types of information identified above which may be monitored according to the present invention, a significant amount of performance information can be tracked during a communication connection, for example, on a minute-by-minute basis or responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be*

*utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to selectively record specified parameters out of the total set of parameters available within the DSP memory 345 during state conditions where the selected parameters are significant or of potential interest to a diagnostic user." and "Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and "Furthermore, as performance information may be collected on a real-time basis during a connection, pertinent data may be preserved which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking) executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.").*

As per **Claim 10**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- a command input that receives modem control commands from the first device, and wherein the recording module processor further causes commands arriving at the command input

during real-time operation of the modem device to be fully recorded for subsequent non-real-time analysis *(see Column 9: 33-37, "Performance information so obtained may include a variety of information including ... call setup return codes (CSR CODE) such as those available on Microsoft Corporation's AT code #UD (UniModem diagnostic command specification) ...").*

As per **Claim 11**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- wherein the first device is a personal computer, and wherein the recording module processor operates to cause the input information arriving at the first input from the personal computer and arriving at the second input from the second device through the communication network, during real-time operation of the modem device, to be fully recorded on a memory device of the personal computer *(see Figure 3: 300; Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by the modem 310."; Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein.").*

As per **Claim 12**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- wherein the recording module processor operates to cause input information arriving at the first input from the first device and arriving at the second input from the second device through the communication network to be communicated to a networked computer communicatively coupled to the modem device over the communication network and fully recorded on a memory device of the networked computer *(see Column 8: 53-62, "Accordingly, in preferred embodiments of the present invention, modem performance is monitored by a host system 300 containing an internal modem 310. Nonetheless, the benefits of the present invention may also be obtained in various other embodiments including those in which the secondary path 335 does not return to the same host as the primary path 315. A second host may be co-located or remote from the first host. In fact, a remote second host could be at a distant location monitoring a modem connection through the secondary path 335.")*.

As per **Claim 13**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- wherein the modem device comprises an ADSL modem *(see Column 7: 60-63, "Similarly, when connected with a broadband network, the modem 310 may be a cable modem, an Asymmetric Digital Subscriber Line (ADSL) ...")*.

As per **Claim 39**, the rejection of **Claim 11** is incorporated; and Abdelilah further discloses:

- wherein the modem device operates to cause the input information to be fully recorded on the memory device of the personal computer by, at least in part, being driven as an

operating system (OS) device driver of the personal computer to write the input information directly to a hard drive of the personal computer *(see Column 4: 20-24, "One known approach to evaluating modem performance is the use of AT commands, such as those provided for by operating systems, such as Windows™ from Microsoft Corporation, for communicating with a modem (such as the #UD command).")*.

As per **Claim 40**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- wherein the recording module processor is integrated into an integrated circuit of the modem device *(see Figure 3: 340, 345, 355, and 360)*.

As per **Claim 41**, the rejection of **Claim 9** is incorporated; and Abdelilah further discloses:

- wherein the recording module processor operates to cause the input information arriving at the first input and the second input during real-time operation of the modem device to be fully recorded in exactly the same sequence as the input information is received at the modem device *(see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein." and 28-33, "... while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to*

*obtain data related to performance of the modem 310 during an active communication session supported by the primary path 315 to the modem 310.").*

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 19-38, 42-44, and 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Abdelilah** in view of **US 6,467,052 (hereinafter "Kaler")**.

As per **Claim 19**, Abdelilah discloses:

- a memory comprising input information recorded by a recording module residing on a modem, wherein the recording module fully records the input information received at the modem during real-time operation of the modem *(see Column 9: 66 and 67 to Column 10: 1-49, "... the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from the types of information identified above which may be monitored according to the present invention, a significant amount of performance information can be tracked during a communication connection, for example, on a minute-by-minute basis or*

*responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to selectively record specified parameters out of the total set of parameters available within the DSP memory 345 during state conditions where the selected parameters are significant or of potential interest to a diagnostic user." and "Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and "Furthermore, as performance information may be collected on a real-time basis during a connection, pertinent data may be preserved which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking) executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.").*

However, Abdelilah does not disclose:

- a playback module communicatively coupled to the memory, the playback module comprising a model of the modem that the playback module executes according to the input information in the memory.

Kaler discloses:

- a playback module communicatively coupled to a memory, the playback module comprising a model of an application that the playback module executes according to input information in the memory *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.").*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include a playback module communicatively coupled to the memory, the playback module comprising a model of the modem that the playback module executes according to the input information in the memory. Note that Kaler also discloses that the invention has utility in analyzing the performance of computer hardware *(see Column 3: 58-65).* The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36).*

As per **Claim 20**, the rejection of **Claim 19** is incorporated; and Abdelilah further discloses:

- information from a computer coupled to the modem *(see Column 7: 44-51, "The host system 300 is coupled to the modem 310 through a primary path 315 which supports communication services utilizing the modem 310.")*; and

- information from a device with which the computer was communicating through a communication network using the modem *(see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by the modem 310.")*.

As per **Claim 21**, the rejection of **Claim 19** is incorporated; and Abdelilah further discloses:

- wherein the input information comprises data and modem control commands sent from a computer to the modem *(see Column 9: 33-37, "Performance information so obtained may include a variety of information including ... call setup return codes (CSR CODE) such as those available on Microsoft Corporation's AT code #UD (UniModem diagnostic command specification) ...")*.

As per **Claim 22**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- a debugging module communicatively coupled to the playback module that provides for controlling and observing the operation of the playback module.

Kaler discloses:

- a debugging module communicatively coupled to a playback module that provides for controlling and observing the operation of the playback module *(see Column 22: 50-67 to Column 23: 1-11, "Like any debugging tool, the VSA should ensure that the debuggability of the system cannot become a security hole. Additionally, VSA debugging is a shared resource in a distributed environment. As such, it is important that proper security precautions be taken to prevent malicious users from obtaining this data.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include a debugging module communicatively coupled to the playback module that provides for controlling and observing the operation of the playback module. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 23**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- wherein the model of the modem comprises a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact software model is modeling.

Kaler discloses:

- wherein a model of a modem comprises a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact

software model is modeling *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the model of the modem comprises a bit-exact software model of the modem that, when executed, produces results that are the same as an original modem that the bit-exact software model is modeling. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 24**, the rejection of **Claim 19** is incorporated; and Abdelilah further discloses:

- a computer communicatively coupled to the modem, and wherein the memory is a memory device of the computer *(see Figure 3: 300, 310, and 315)*.

As per **Claim 25**, the rejection of **Claim 24** is incorporated; however, Abdelilah does not disclose:

- wherein the computer comprises the playback module.

Kaler discloses:

- wherein a computer comprises a playback module *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the computer comprises the playback module. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 26**, the rejection of **Claim 19** is incorporated; and Abdelilah further discloses:

- a networked computer communicatively coupled to the modem over a computer network, and wherein the networked computer comprises the memory *(see Column 8: 53-62, "Accordingly, in preferred embodiments of the present invention, modem performance is monitored by a host system 300 containing an internal modem 310. Nonetheless, the benefits of the present invention may also be obtained in various other embodiments including those in which the secondary path 335 does not return to the same host as the primary path 315. A*

*second host may be co-located or remote from the first host. In fact, a remote second host could be at a distant location monitoring a modem connection through the secondary path 335.").*

As per **Claim 27**, Abdelilah discloses:

- operating the modem in real-time to communicatively couple the first device and the second device, the modem comprising a recording module *(see Column 7: 44-51, "The host system 300 is coupled to the modem 310 through a primary path 315 which supports communication services utilizing the modem 310. More particularly, communications from applications executed on the host system 300 are conveyed on the primary path 315 to the modem 310 for transmission through the port 320 which, in the illustrated embodiment, provides a connection to the Public Switched Telephone Network (PSTN)."; Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein." and 28-33, "... while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to obtain data related to performance of the modem 310 during an active communication session supported by the primary path 315 to the modem 310.")*; and

- while operating the modem in real-time, utilizing the recording module to fully record input information input to at least the first and/or second inputs of the modem *(see Column 9: 66 and 67 to Column 10: 1-49, "... the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP*

*memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from the types of information identified above which may be monitored according to the present invention, a significant amount of performance information can be tracked during a communication connection, for example, on a minute-by-minute basis or responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to selectively record specified parameters out of the total set of parameters available within the DSP memory 345 during state conditions where the selected parameters are significant or of potential interest to a diagnostic user." and "Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and "Furthermore, as performance information may be collected on a real-time basis during a connection, pertinent data may be preserved which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking) executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.").*

However, Abdelilah does not disclose:

- after operating the modem in real-time, executing a model of the modem, where the model is responsive to the recorded input information.

Kaler discloses:

- after operating an application in real-time, executing a model of the application, where the application is responsive to recorded input information *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include after operating the modem in real-time, executing a model of the modem, where the model is responsive to the recorded input information. Note that Kaler also discloses that the invention has utility in analyzing the performance of computer hardware *(see Column 3: 58-65)*. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 28**, the rejection of **Claim 27** is incorporated; and Abdelilah further discloses:

- the first device comprises a personal computer *(see Figure 3: 300)*; and

- utilizing the recording module comprises utilizing the recording module to fully record the input information input to at least the first and second inputs of the modem to a memory device of the personal computer *(see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein." and 28-33, "... while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to obtain data related to performance of the modem 310 during an active communication session supported by the primary path 315 to the modem 310.").*

As per **Claim 29**, the rejection of **Claim 28** is incorporated; and Abdelilah further discloses:

- operating the modem comprises driving the modem as an operating system device driver on the personal computer *(see Column 4: 20-24, "One known approach to evaluating modem performance is the use of AT commands, such as those provided for by operating systems, such as Windows™ from Microsoft Corporation, for communicating with a modem (such as the #UD command).").*

As per **Claim 30**, the rejection of **Claim 27** is incorporated; and Abdelilah further discloses:

- the second device is a computer *(see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port*

*320 and provided to a destination application executing on the host system 300 by the modem 310.")*; and

- utilizing the recording module comprises utilizing the recording module to fully record the input information to a memory device of the computer *(see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein." and 28-33, "... while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to obtain data related to performance of the modem 310 during an active communication session supported by the primary path 315 to the modem 310.")*.

As per **Claim 31**, the rejection of **Claim 30** is incorporated; and Abdelilah further discloses:

- wherein utilizing the recording module of the modem comprises executing a recording application program on the computer *(see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein.")*.

As per **Claim 32**, the rejection of **Claim 27** is incorporated; and Abdelilah further discloses:

- the first device is a personal computer *(see Figure 3: 300)*; and

- utilizing the recording module to fully record the input information input to at least the first and/or second inputs of the modem comprises utilizing the recording module to fully record the input information *(see Column 8: 15-20, "The DSP memory 345 further includes one or more first-in first-out (FIFO) buffers 355, 360. The FIFO buffers 355, 360 implemented in the DSP memory 345 are used to record state transitions made for one or more of the state machines of the modem 310 as will be described further later herein." and 28-33, "... while the secondary path 335 through the bus interface 325 allows the host system 300 to access the DSP memory 345 to obtain data related to performance of the modem 310 during an active communication session supported by the primary path 315 to the modem 310.")* comprising:

- data input to the first input from the personal computer *(see Column 7: 44-51, "The host system 300 is coupled to the modem 310 through a primary path 315 which supports communication services utilizing the modem 310.")*;

- commands input to a command input of the modem from the personal computer *(see Column 9: 33-37, "Performance information so obtained may include a variety of information including ... call setup return codes (CSR CODE) such as those available on Microsoft Corporation's AT code #UD (UniModem diagnostic command specification) ...")*; and

- samples input to the second input from the second device through the communication network *(see Column 7: 51-55, "Similarly, communications from a remote device by a server modem (not shown) are received from the PSTN through port 320 and provided to a destination application executing on the host system 300 by the modem 310.")*.

As per **Claim 33**, the rejection of **Claim 27** is incorporated; however, Abdelilah does not disclose:

- wherein executing the model of the modem comprises executing a software model of the modem, and the method further comprises reading the recorded input information into the software model.

Kaler discloses:

- wherein executing a model of a modem comprises executing a software model of the modem, and a method further comprises reading recorded input information into the software model *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein executing the model of the modem comprises executing a software model of the modem, and the method further comprises reading the recorded input information into the software model. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 34**, the rejection of **Claim 27** is incorporated; however, Abdelilah does not disclose:

- wherein executing the model of the modem comprises executing a bit-exact software model of the modem.

Kaler discloses:

- wherein executing a model of a modem comprises executing a bit-exact software model of the modem *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein executing the model of the modem comprises executing a bit-exact software model of the modem. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 35**, the rejection of **Claim 27** is incorporated; however, Abdelilah does not disclose:

- the model of the modem comprises a software component that is the same as a software component of the modem; and

- executing the model of the modem comprises executing the software component.

Kaler discloses:

- a model of a modem comprises a software component that is the same as a software component of the modem *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*; and

- executing the model of the modem comprises executing the software component *(see Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include the model of the modem comprises a software component that is the same as a software component of the modem; and executing the model of the modem comprises executing the software component. The modification would be obvious because one

of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 36**, the rejection of **Claim 27** is incorporated; however, Abdelilah does not disclose:

- the model of the modem comprises a hardware component that is the same as a hardware component of the modem; and
- executing the model of the modem comprises utilizing the hardware component.

Kaler discloses:

- a model of a modem comprises a hardware component that is the same as a hardware component of the modem *(see Figure 14; Column 3: 58-65, "While the invention has utility in analyzing the performance of a software application that is executing on a distributed data processing system, its utility is not limited to such, and it has utility in analyzing the performance of computer hardware ..."; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*; and
- executing the model of the modem comprises utilizing the hardware component *(see Column 35: 36-47, "... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are*

*dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.").*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include the model of the modem comprises a hardware component that is the same as a hardware component of the modem; and executing the model of the modem comprises utilizing the hardware component. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36).*

As per **Claim 37**, the rejection of **Claim 27** is incorporated; however, Abdelilah does not disclose:

- debugging operation of the modem by, at least in part, observing execution of the model with the recorded input information in non-real-time.

Kaler discloses:

- debugging operation of a modem by, at least in part, observing execution of a model with recorded input information in non-real-time *(see Column 22: 50-67 to Column 23: 1-11, "Like any debugging tool, the VSA should ensure that the debuggability of the system cannot become a security hole. Additionally, VSA debugging is a shared resource in a distributed environment. As such, it is important that proper security precautions be taken to prevent malicious users from obtaining this data.").*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include debugging operation of the modem by, at least in part, observing execution of the model with the recorded input information in non-real-time. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 38**, the rejection of **Claim 27** is incorporated; and Abdelilah further discloses:

- wherein the modem comprises an ADSL modem *(see Column 7: 60-63, "Similarly, when connected with a broadband network, the modem 310 may be a cable modem, an Asymmetric Digital Subscriber Line (ADSL) ...")*.

As per **Claim 42**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- wherein the model of the modem comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem.

Kaler discloses:

- wherein a model of a modem comprises a bit-exact software model of the modem that exactly mimics real-time operation of the modem *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 35: 36-47, "... so that*

*in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the model of the modem comprises a bit-exact software model of the modem that exactly mimics the real-time operation of the modem. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 43**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- wherein the playback module comprises playback software that, when executed by a processor, causes the reading of the input information into the model of the modem.

Kaler discloses:

- wherein a playback module comprises playback software that, when executed by a processor, causes reading of input information into a model of a modem *(see Column 34: 5-9, "Using the VCR paradigm to control the depiction of the application performance, the VSA can run through each of the events and correspondingly animate the application model shown in FIG. 13 or FIG. 14.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the playback module comprises playback software that, when executed by a processor, causes the reading of the input information into the model of the modem. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 44**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- wherein the model of the modem comprises a software component that is the same as a software component of the modem being modeled.

Kaler discloses:

- wherein a model of a modem comprises a software component that is the same as a software component of the modem being modeled *(see Figure 14; Column 33: 15-20, "FIG. 14 illustrates various user interface features of an animated application model in an exemplary embodiment of the invention. The user interface features are shown generally by reference number 400. In the UI depicted in FIG. 14, diagrams are portrayed of the different blocks representing varying levels of detail of a hierarchical model of the application.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the model of the modem comprises a software

component that is the same as a software component of the modem being modeled. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

As per **Claim 46**, the rejection of **Claim 19** is incorporated; however, Abdelilah does not disclose:

- wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment.

Kaler discloses:

- wherein a playback module comprises playback software comprising a bit-exact model of the operation of a modem, such that any modem behaviors that occurred in real-time operation during a period of time over which input information was obtained will recur during execution of the playback software in a non-real-time playback environment *(see Column 32: 57-62, "As new diagram elements are identified, they are added to the user's screen 370."; Column 33: 28-31, "... users can play and replay the application execution, stop, pause, reverse, speed up, slow down, and so forth."; Column 35: 36-47, "In addition, all of the above windows can be operated to display the application performance in real time as well as "post mortem". ... so that in real time as an application is being analyzed, one block will appear, then another, and then the interconnection between the two blocks. Blocks are dynamically added, removed, and*

*moved, and the interconnections between them are dynamically changed to reflect changing conditions in the execution of the application. The diagram is kept up to date with what is really happening.")*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kaler into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the playback module comprises playback software comprising a bit-exact model of the operation of the modem, such that any modem behaviors that occurred in real-time operation during the period of time over which the input information was obtained will recur during execution of the playback software in the non-real-time playback environment. The modification would be obvious because one of ordinary skill in the art would be motivated to observe and isolate undesirable modem performance and behavior *(see Kaler – Column 1: 33-36)*.

11. **Claim 45** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Abdelilah** in view of **Kaler** as applied to Claim 19 above, and further in view of **US 5,353,243 (hereinafter "Read")**.

As per **Claim 45**, the rejection of **Claim 19** is incorporated; however, Abdelilah and Kaler do not disclose:

- wherein the model of the modem is a hardware model that comprises an actual hardware component that is the same as a hardware component of the modem being modeled.

Read discloses:

- wherein a model of a modem is a hardware model that comprises an actual hardware component that is the same as a hardware component of the modem being modeled *(see Column 4: 32-50, "The HMS of the present invention provides hardware models of standard ICs, ASICs, and electronic subsystems. The HMS has a number of applications. Some of the major ones are as follows: ...").*

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Read into the teaching of Abdelilah to modify Abdelilah's invention to include wherein the model of the modem is a hardware model that comprises an actual hardware component that is the same as a hardware component of the modem being modeled. The modification would be obvious because one of ordinary skill in the art would be motivated to verify both logic and timing behavior of a modem *(see Read – Column 1: 21-31).*

***Response to Arguments***

12. Applicant's arguments filed on January 27, 2010 have been fully considered, but they are not persuasive.

***In the Remarks, Applicant argues:***

a) Abdelilah merely teaches using the DSP 340 to process and store in DSP memory 345: diagnostic data, data related to modem performance and internal state information (i.e., select data). (See e.g., Abdelilah, Abstract; Column 4, Lines 62-64; Column 5, Lines 14 and 24-30; Column 8, Lines 16-19, 30-31 and 63-66; Column 9, Lines 1-4, 10-11 and 33-43; and Column

10, Lines 6-7). Nowhere in Abdelilah is there any disclosure regarding fully recording input information arriving at one or both of the first input and the second input. Rather, Abdelilah identifies the select data that may be obtained, for example, at Column 9, Lines 33-61. Thus, because Abdelilah merely discloses processing and storing select data related to diagnostics, performance and internal states, Abdelilah fails to disclose "a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis," as recited by the Applicant in independent claim 9. Because the Office Action has failed to show "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference" as required for an anticipation rejection under MPEP 2131, the rejection under 35 U.S.C. § 102(e) cannot be maintained.

***Examiner's response:***

a) Examiner disagrees. With respect to the Applicant's assertion that Abdelilah fails to disclose "a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis," the Examiner respectfully submits that Abdelilah clearly discloses "a recording module processor communicatively coupled to the first input and the second input that operates to fully record input information arriving at one or both of the first input and the second input during real-time operation of the modem device for subsequent non-real-time analysis"

*(see Column 9: 66 and 67 to Column 10: 1-49, "... the teachings of the present invention are particularly directed to environments in which both a primary path and a secondary path are available to the DSP memory 345 to provide for monitoring operations to occur in real time while a communication connection is active through the modem. As is evident from the types of information identified above which may be monitored according to the present invention, a significant amount of performance information can be tracked during a communication connection, for example, on a minute-by-minute basis or responsive to detection of the occurrence of certain events. The monitoring system of the present invention may be utilized to monitor internal states of the modem 310 or state transitions of one or more state machines implemented within the modem 310 and to selectively record specified parameters out of the total set of parameters available within the DSP memory 345 during state conditions where the selected parameters are significant or of potential interest to a diagnostic user." and "Information may be collected on a real time basis and recorded during the life of a connection. Furthermore, information about disconnects may be gathered and throughput for a connection can be estimated. In addition, data may also be collected when a connection is being attempted, in other words, during the startup phases before a connection is in use for data communication." and "Furthermore, as performance information may be collected on a real-time basis during a connection, pertinent data may be preserved which might otherwise be lost as a result of an event causing diagnostic data in the DSP memory 345 to be overwritten (for example, during retrains). The performance data may be recorded while the user of the client modem 310 is actively connected to a remote server modem in a normal manner such as through a service provider end user application (e.g. AOL, IGN Dialer and Windows Dial-up Networking)*

*executing on the host system 300. Performance data may be obtained throughout the active connection operations including both the startup phases and during data communication as well as the disconnect procedures.")*. Note that Abdelilah's invention is directed to monitoring the performance of a modem which may be able to obtain data in real-time. Abdelilah discloses that real-time modem performance data, internal states of the modem, modem communication data, and modem startup and disconnect data, etc. are recorded during the life of a connection of the modem. Thus, one of ordinary skill in the art would readily comprehend that pertinent data and information related to the performance of the modem must be fully recorded in order to provide a complete analysis of the performance of the modem at a later time.

Therefore, for at least the reason set forth above, the rejection made under 35 U.S.C. § 102(e) with respect to Claim 9 and the rejections made under 35 U.S.C. § 103(a) with respect to Claims 19 and 27 are proper and therefore, maintained.

## *Conclusion*

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Qing Chen whose telephone number is 571-270-1071. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 4:00 PM. The Examiner can also be reached on alternate Fridays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wei Zhen, can be reached on 571-272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Q. C./

Examiner, Art Unit 2191

/Anna Deng/

Primary Examiner, Art Unit 2191